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## FREQUENCY OF EYE REFRACTIONS IN 9,000 FAMILIES, BASED ON NATION-WIDE PERIODIC CANVASSES, 1928- 1931<sup>1</sup>

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Eye refractions or examinations of the eyes do not clearly fall into the field of either preventive or therapeutic medicine. Many of them are solely for curative purposes, for the patient comes for refraction only when impairment of vision is such as to force him to procure glasses so that he may carry on his usual occupation or to relieve headache or other symptoms. On the other hand, the examination of the eyes is in some respects a preventive service like the health examination, and the wearing of lenses may prevent the development of various symptoms and complications.

Data on the proportion of individuals who have defective vision are available in many reports on school children and adults of various ages (1, 2, 3, 4, 7, 9, 10, 13). That many persons with impaired vision have never gone to an eye physician or to an optician and been fitted with glasses may be inferred from the large percentage of persons with considerable loss of vision who were not wearing glasses at the time they were examined (2, 13). But data are lacking on the

<sup>1</sup> From the Office of Statistical Investigations, U.S. Public Health Service.

This is the third of a series of papers on sickness and medical care in this group of families (5, 6). The survey of these families was organized and conducted by the Committee on the Costs of Medical Care; the tabulation was done under a cooperative arrangement between the Committee and the Public Health Service. Committee publications based on the results deal primarily with costs and Public Health Service publications primarily with the incidence of illness and the extent and kind of medical care, without regard to cost. As costs are meaningless without some knowledge of the extent and nature of the service received, there is inevitably some overlapping.

Grateful acknowledgment is made for advice and assistance received in the course of the study from various members of the research staff of the Committee on the Costs of Medical Care, particularly Dr. I. S. Falk and Miss Margaret C. Klem, and from members of the statistical staff of the Public Health Service. Special thanks are due to Miss Lily Vansee, who was in immediate charge of tabulating the data.

actual proportion of the total population who have an eye refraction in the course of a year.

#### SOURCE AND CHARACTER OF THE DATA

In connection with the study of illness in canvassed families in 130 localities in 18 States that was made by the Committee on the Costs of Medical Care and the United States Public Health Service (5, 8), all service received from physicians or other practitioners was recorded, whether for illness, eye refraction, physical examination, immunization, or other reason. These records afford data on the frequency of eye refractions in a fairly representative general population group. The composition and characteristics of this group of 8,758 white families who were kept under observation for 12 consecutive months in the years 1928-31 have been discussed in some detail in preceding reports (5, 6, 8). These families, including a total of 39,185 individuals, resided in 18 States, representing every geographical section. Every size of community was included, from metropolitan districts to small industrial and agricultural towns and rural unincorporated areas. Although not identical with the general population, the persons in the observed families were fairly typical with respect to age and sex distribution, percentage native born, and percentage married. With respect to income, their distribution was reasonably similar to the estimated distribution of the general population of the United States at the time of the survey.

Eye tests are almost invariably included as a part of a general physical examination. The eye examinations considered in this study do not include refractions made incidental to such examinations; this report considers separate eye tests usually made for the purpose of fitting glasses, for in 88 percent of all the cases glasses were procured after refraction. Some of the tests may have been made as a result of the finding of visual impairment by the physical examination, but in such cases they represent a second refraction for the individual.

#### FREQUENCY OF EYE REFRACTIONS

In the course of the year there were 40 eye examinations per 1,000 persons, exclusive of refractions made as a part of a general physical examination. If it be assumed that each of the complete physical examinations, other than well-baby care, included a refraction, the total of all eye examinations would amount to 94 per 1,000 population. For persons 5 years old and over, there were 57 complete examinations and 46 other refractions per 1,000 or a total of 103. The annual number of eye refractions with or without a general physical examination appears to equal about 10 percent of the population under observation.

Of the 39.6 eye refractions per 1,000 population in the course of the year, 34.9 resulted in the procurement of lenses by purchase or gift, the other 4.7 per 1,000 being eye examinations without the purchase of lenses. In addition, there were 119 cases, or 3.1 per 1,000 persons, for the repair of glasses or replacement of broken lenses without refraction. Since this report deals solely with eye examinations, repair cases without refraction are omitted from further consideration.

#### FREQUENCY OF REFRACTIONS AT DIFFERENT AGES

Table 1 and figure 1 show refraction rates per 1,000 in rather detailed age groups. There are practically no eye examinations under 3 and very few under 5 years of age. From 7 per 1,000 at 4 years, the frequency of refractions rises rapidly to 44 per 1,000 at 7 years. From 7 to 15 years there is a more gradual rise to a peak of 54 per 1,000 at 14-15, followed by a drop to 33 per 1,000 at 18-19, which marks the approximate level of the curve until nearly 40 years of age. From 40 to 55 the rate again rises rapidly to a maximum of 87 per 1,000 at 50-54 years. After this peak the frequency of refractions declines to 33 per 1,000 for persons 70 years old and over, the approximate level of the rate from 18 to nearly 40 years.

TABLE 1.—*Eye refractions per 1,000 persons of specific ages of each sex—canvassed white families in 18 States during 12 consecutive months, 1928-31*

Age in years	Both sexes <sup>1</sup>			Refractions per 1,000 population per year				Total number of refractions		Population (years of life)		
	Refractions per 1,000 population per year		Percentage of those refracted who bought lenses	Population (years of life)	All refractions		Refractions and lenses bought					
	All refractions	Refractions and lenses bought			Male	Female	Male	Female	Male	Female		
All ages <sup>1</sup> ....	39.6	34.9	88.2	38,544	33.1	45.8	28.7	40.9	626	899	18,896	19,627
Under 3....	0.3	0.3	3,295	1,072	3.2	2.6	1.8	2.6	9	7	2,808	2,684
3.....	6.5	5.6	85.7	1,148								
4.....	7.0	5.2	75.0	1,172								
5.....	21.3	18.8	88.0	1,158								
6.....	30.2	23.3	77.1	1,171	37.6	34.2	29.8	28.0	106	99	2,820	2,895
7.....	44.4	38.4	86.5	1,171								
8-9.....	42.0	32.1	76.3	2,214								
10-11.....	49.0	42.4	86.6	1,980								
12-13.....	41.9	36.1	86.3	1,744	244.3	49.8	37.4	43.7	102	113	2,301	2,267
14-15.....	54.2	47.1	86.7	1,530								
16-17.....	50.9	43.2	84.8	1,296	238.6	52.5	34.1	44.0	59	80	1,527	1,523
18-19.....	32.8	27.2	82.9	1,068								
20-24.....	31.6	27.4	86.6	2,119	22.4	38.4	21.3	31.8	20	47	894	1,225
25-29.....	30.5	26.5	86.8	2,491	23.9	35.0	20.9	30.3	24	52	1,004	1,487
30-34.....	37.2	34.9	94.0	3,149	28.6	44.0	27.2	41.1	40	77	1,396	1,751
35-39.....	37.4	34.0	91.1	3,292	29.7	44.4	27.8	39.8	47	76	1,582	1,710
40-44.....	55.7	50.8	91.2	2,638	30.8	83.8	27.9	76.6	43	104	1,397	1,241
45-49.....	71.6	67.9	94.9	1,923	53.4	93.3	45.6	91.0	56	82	1,049	879
50-54.....	87.1	78.7	90.3	1,423	66.6	113.2	60.3	102.1	53	71	796	627
55-59.....	76.4	69.2	90.6	838	64.0	90.9	50.8	90.9	29	35	453	385
60-64.....	61.4	58.3	94.9	635	54.1	70.4	48.4	70.4	19	20	351	284
65-69.....	55.2	41.9	76.0	453	44.6	63.8	29.7	51.8	9	16	202	251
70 and over.....	33.0	27.5	83.3	545	21.3	41.9	17.0	35.5	5	13	235	310

<sup>1</sup> "All ages" includes a few of unknown age; "Both sexes" includes a few of unknown sex.

<sup>2</sup> 10-14 years.

<sup>3</sup> 15-19 years.

The first period of high refraction rates, from 7 to 17 years, is obviously associated with school life. As will be seen later, very few of the refractions reported in this study were done in public clinics, and so these high rates do not appear to be a reflection solely of more

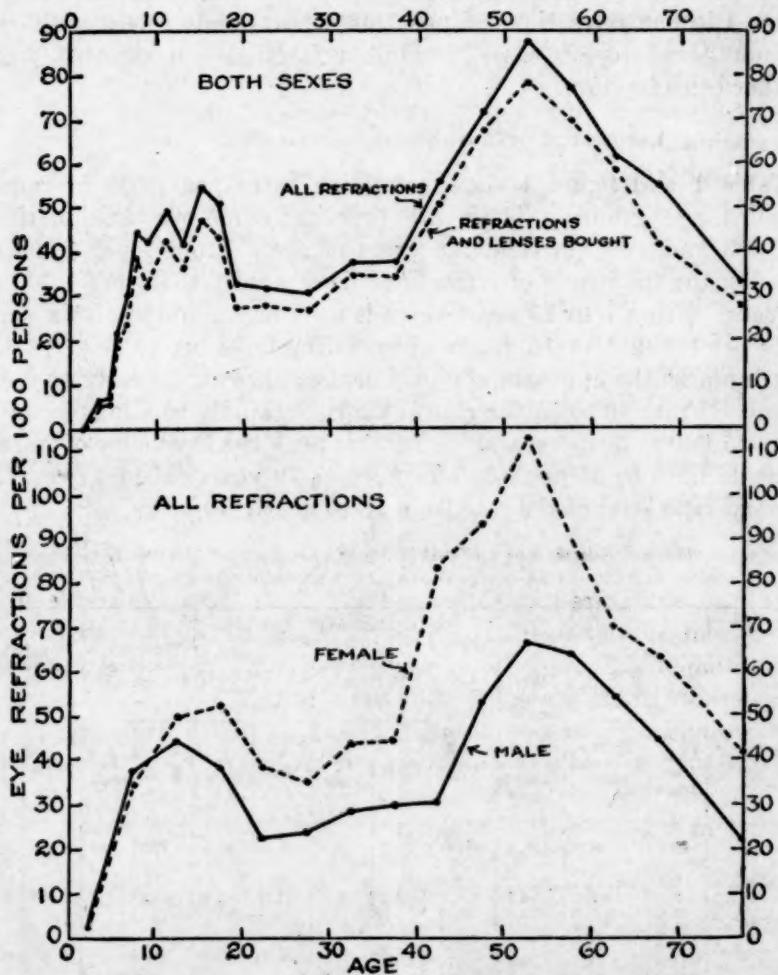


FIGURE 1.—Eye refractions per 1,000 persons of specific ages and for each sex—canvassed white families in 18 States during 12 consecutive months, 1928-31.

accessible facilities for eye examinations during the school ages. The broken line on the graph (upper section of fig. 1) shows refractions per 1,000 in which the patient procured lenses as a result of the examination. This line is also high during the school ages, suggesting that

this period is a time of real stress for the eyes.<sup>2</sup> With rather close work in school, the higher rates, that indicate more eye difficulties, might be expected; the decrease in refractions that follows these ages is also reasonable, since many of the former school children would be in occupations that did not involve intensive use of the eyes.

The second rise in the frequency of eye refractions, which begins about 40 years of age, apparently marks the onset of presbyopia, or the failing of sight that comes with age. The peak in the refraction rate at 50-54 years and its decline after that age is consistent with the observation that presbyopia gradually increases until about 60 years, and is likely to remain stationary after that age (12).

Data on industrial workers and life insurance policyholders (1, 3, 13) indicate a steady rise with age in the proportion of adults with defective vision as found by the Snellen and Jaeger tests. However, the rate of increase is greater from 40 to 50 years than at other ages.

The broken line (upper part of fig. 1), representing refractions with lenses purchased, follows very closely the line of total refractions. This close correspondence in the two curves for the various ages indicates that few persons, either children or adults, have their eyes examined unless there is considerable evidence of the need of glasses or a change of lenses.

#### FREQUENCY OF REFRACTIONS AMONG MALES AND FEMALES

Table 1 and figure 1 also show refractions among males and females of different ages. Under 10 years the rates are slightly greater for males than for females, but at all other ages eye refractions are considerably more frequent among females.

Examinations of school children (2) and adults (13) in other studies indicate slightly more defective vision among females than among males except in the older ages.<sup>3</sup> The greater frequency of eye refractions among females which is shown in figure 1 may be due to this greater prevalence of visual impairment, but other factors may be involved. Two such factors suggest themselves—the tendency of women toward more frequent general physical examinations, as shown in a preceding paper (6), and the fact that at least employed women, if not housewives also, are more largely in occupations that involve closer eye work than is true of men.

Another striking contrast between the curves of eye refractions among males and females (fig. 1) is the earlier rise among middle-aged

<sup>2</sup> That the school period is a time of real stress for the eyes of children is also indicated by the change in visual acuity during these ages. Former studies made by the Public Health Service Investigators (2, 9, 10) indicate that the proportion of children with very poor vision (20/70 or worse) increases during the school ages. In another study (3) it was found that the increase with age in the proportion of persons with very poor vision occurred at a somewhat greater rate during the school ages (6-16 years) than during the years immediately following school life (ages 20-30).

<sup>3</sup> In the school ages the excess of defective vision of females over males appears to be confined to that of slight degree; the more serious defects are of approximately the same frequency in the two sexes.

adult females. Among males the frequency of refractions remains on a low level through the 40-44 year group, but among females the low level continues only through the 35-39 year group, with a very marked rise at 40-44 years.

A study of data on visual impairment of men and women of different ages by Sydenstricker and Britten (13) is useful in interpreting these differences. Figure 2 shows the percentage of male and of female ordinary life-insurance policyholders of specific ages above 30 years that were found on examination by the Snellen and the

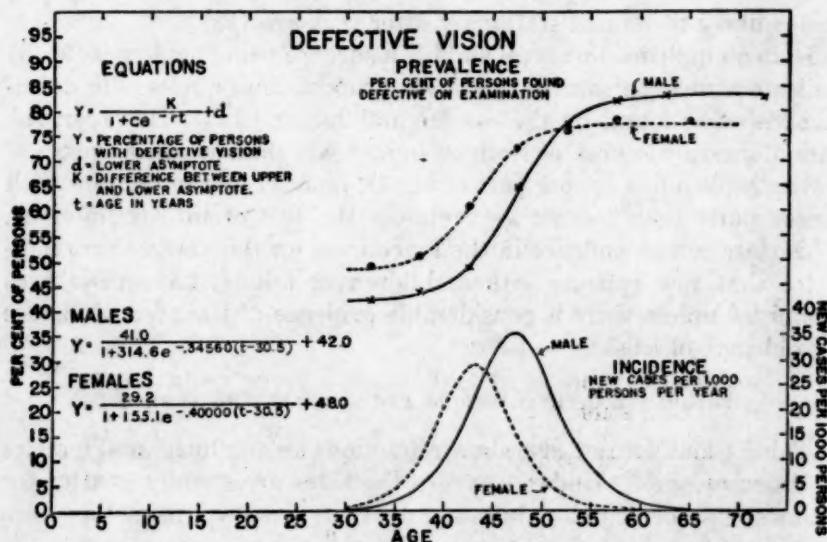


FIGURE 2.—Prevalence of defective vision (any degree, either eye) and the estimated annual incidence (new cases) among white males and females of specific ages above 30 years—based on eye tests made as a part of a general physical examination of 100,924 male and 11,694 female ordinary-life insurance policyholders by the Life Extension Institute. The smooth curves of prevalence are logistics and the incidence curves are differences between the computed prevalence at successive ages. (Original data from Sydenstricker and Britten (13).)

Jaeger tests to have defective vision of any degree in either eye. Up to 50 years, more women than men were found to have defective vision. It is seen also that the rise in the rate that comes in middle life begins earlier among women than among men. To determine the age when defective vision is increasing most rapidly, logistic curves were fitted to the data for males and females above 30 years of age and values computed for each age.<sup>4</sup> By subtracting the defective vision rate at one age from that in the next higher year of age, the proportion of persons who become defective during that

<sup>4</sup> No attempt has been made to apply the logistic curve to defective vision rates in the ages under 30 years. The percentage of children with defective vision actually decreases up to about 20 years of age (2, 3, 9, 11), but the decrease is all in the slight defects. Likewise, in the early adult ages, defective vision rates are not represented by any extension of the growth curves shown in fig. 2. The logistic plotting has been applied only to the ages above 30 years, when the development of presbyopia is the reason for the large increase in defective vision.

yearly age interval can be approximated. The lower curves in figure 2 are a plotting of these yearly differences, and they represent new cases of defective vision for each year of age. The peak of the new cases occurs 4 years earlier in women (43 years) than in men (47 years). The difference between the sexes in the average (modal) age when presbyopia has its onset thus explains the earlier rise among females in the curve of the frequency of eye refractions, as shown in figure 1.

#### FREQUENCY OF REFRACTIONS AMONG MARRIED AND SINGLE PERSONS

In table 2 the frequency of refractions has been recorded for single and married persons of each sex for the ages 20-34 years. Since the refraction rate is reasonably constant within those ages, the group can be considered as a whole. Refractions are somewhat more frequent among married than among single men. Among women the difference is much greater, the refraction rate of 64 for single women being nearly twice the rate of 33 per 1,000 for married women of the same ages. The occupational factor is suggested by this difference, because many single women are in clerical and similar occupations involving the use of the eyes to a greater extent than the work of a housewife. Moreover, the gainfully employed single women have their own incomes, and this would make for more frequent refractions apart from occupation.

TABLE 2.—*Eye refractions per 1,000 single and married persons 20-34 years of age—canvassed white families in 18 States during 12 consecutive months, 1928-31*

Marital status	All refractions			Refractions and lenses bought			Both sexes	Male	Female
	Both sexes	Male	Female	Both sexes	Male	Female			
Refractions per 1,000 persons 20-34 years of age									
Single.....	43.0	22.8	64.0	39.2	20.6	68.4	91.0	90.5	91.2
Married.....	30.7	26.7	33.4	27.4	25.0	29.1	89.4	93.7	87.2
Number of refractions									
Single.....	78	21	57	71	19	52	1,812	922	890
Married.....	180	63	117	161	59	102	5,809	2,364	3,505
Percentage of those refracted who bought lenses									

#### FAMILY INCOME AND FREQUENCY OF REFRACTIONS

Eye examinations, like other medical care, are more frequent in the higher income groups. Considering all ages, refraction rates rise steadily from 22 per 1,000 persons in families with an annual income of less than \$1,200 to 102 in families with incomes of \$5,000 or more per year. The rate for persons in families with incomes of \$10,000 or

more is even higher, being six and one half times the rate in families with less than \$1,200 income.

TABLE 3.—*Eye refractions per 1,000 persons in canvassed white families of different income levels in 18 States during 12 consecutive months, 1928-31*

Annual family income	Age						
	All ages <sup>1</sup>	Ages 5 years and over	Under 5	5-19	20-44	45-64	65 and over
Refractions per 1,000 population per year							
Under \$1,200	22.2	26.0	3.12	30.2	21.6	26.2	20.2
\$1,200 but under \$2,000	23.5	27.7	.90	27.7	23.4	45.7	17.7
\$2,000 but under \$3,000	36.0	41.3	5.11	36.6	36.5	67.6	58.2
\$3,000 but under \$5,000	49.5	54.7	3.76	50.0	53.9	65.7	64.3
\$5,000 and over	101.5	110.2	5.22	100.0	84.4	161.3	74.1
Number of refractions							
Under \$1,200	129	126	3	66	38	17	5
\$1,200 but under \$2,000	315	309	2	132	112	60	5
\$2,000 but under \$3,000	342	334	7	119	129	75	11
\$3,000 but under \$5,000	243	238	2	80	102	47	9
\$5,000 and over	476	470	2	157	141	160	12
Population (years of life)							
Under \$1,200	5,820	4,837	962	2,183	1,758	649	247
\$1,200 but under \$2,000	13,419	11,161	2,216	4,773	4,792	1,313	283
\$2,000 but under \$3,000	9,491	8,091	1,370	3,255	3,537	1,110	189
\$3,000 but under \$5,000	4,911	4,348	532	1,600	1,893	715	140
\$5,000 and over	4,689	4,264	383	1,440	1,670	992	162

<sup>1</sup> "All ages" includes a few of unknown age.

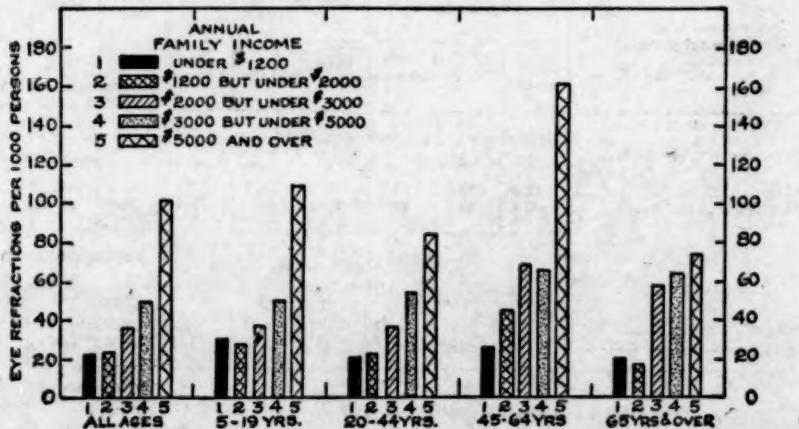


FIGURE 3.—*Eye refractions per 1,000 persons of specific ages in different income levels—canvassed white families in 18 States during 12 consecutive months, 1928-31.*

Table 3 and figure 3 show refraction rates for persons of specific ages in families of different income levels. The tendency toward a

greater frequency of eye refractions as income increases is marked for every age group.

#### OCCUPATION AND FREQUENCY OF REFRACTIONS

The frequency of refractions among persons in different occupations is of particular interest because of the great variation in the use of the eyes. If sufficient data were available, it would be worth while to compute rates for specific occupations, such as lawyers, clerical workers, carpenters, street laborers, and similar groups. The best that can be done with the available material is to consider rather broad occupational classes.

TABLE 4.—*Eye refractions per 1,000 persons in certain occupations—canvassed white families in 18 States during 12 consecutive months, 1928-31*

Occupation	Refractions per 1,000 population per year				Number of refractions				Population			
	Total 15-64	15-24	25-44	45-64	Total 15-64	15-24	25-44	45-64	Total 15-64	15-24	25-44	45-64
Males												
Professional men.....	87.6	34.5	55.3	148.9	58	1	22	35	662	29	308	225
Merchants and business men.....	66.1	—	50.3	94.0	87	—	38	49	1,316	39	756	521
Clerks and salesmen.....	42.3	7.6	37.0	86.8	62	2	33	27	1,464	262	891	311
Skilled and unskilled labor.....	18.8	11.7	16.2	29.7	75	7	39	29	3,984	597	2,412	975
Farmers and farm laborers.....	10.8	29.0	21.1	14.5	19	4	10	5	958	138	475	345
Females												
Professional women.....	106.7	64.0	124.6	109.4	51	8	36	7	478	125	289	64
Clerks, saleswomen, and merchants.....	66.2	52.0	93.4	32.3	50	21	27	2	755	404	289	62
Skilled and unskilled labor.....	27.8	11.9	25.3	71.4	11	2	4	5	396	168	158	70
All housewives <sup>1</sup> .....	54.5	18.5	44.2	97.5	430	13	236	181	7,897	701	5,340	1,856
Town or city housewives.....	57.3	20.8	45.8	106.4	375	12	206	157	6,548	578	4,495	1,475
Farm housewives.....	40.8	8.1	35.5	63.0	55	1	30	24	1,349	123	845	381

<sup>1</sup> Housewife here means a person in charge of the home, and therefore includes a few single women.

Table 4 and figure 4 show refraction rates in occupational groups. The frequency of refractions is much greater in professional, business, and clerical occupations than among skilled and unskilled laborers. If salesmen and clerical workers are considered in separate categories, the clerks are found to have somewhat higher refraction rates than salespeople of the same sex.

Among housewives the frequency of refractions is greater than among females in skilled and unskilled labor, but not as high as among clerks and saleswomen and much lower than among professional women. Refractions are more frequent among housewives who live in towns and cities than among those on the farm.

The refraction rate for farmers is only slightly above that for skilled and unskilled laborers and considerably below the rates for clerks and salesmen, business men, and professional men.

Refractions are much more frequent among persons 15-24 years of age who are attending school than among others of these ages.

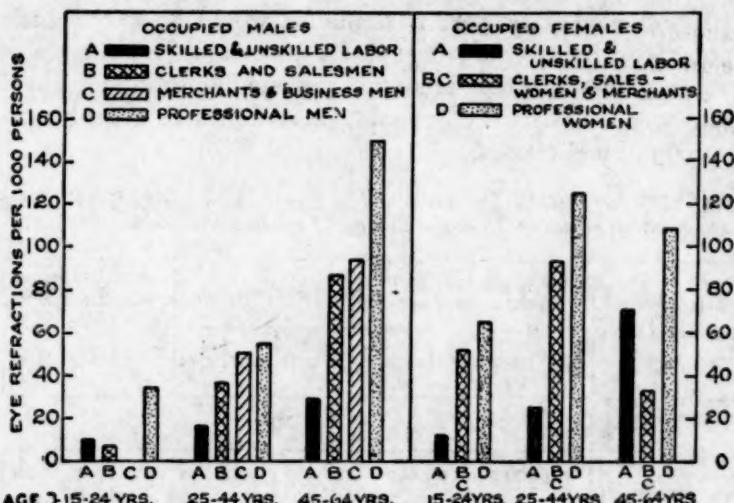


FIGURE 4.—Eye refractions per 1,000 males and females of specific ages in certain occupations—canvassed white families in 18 States during 12 consecutive months, 1928-31.

#### FREQUENCY OF REFRACTIONS IN URBAN AND RURAL AREAS

Table 5 and figure 5 show refraction rates for persons living in cities and towns of different sizes and in rural unincorporated areas. Considering persons of all ages, refractions are considerably more frequent in cities than in rural areas; the rates in cities are about

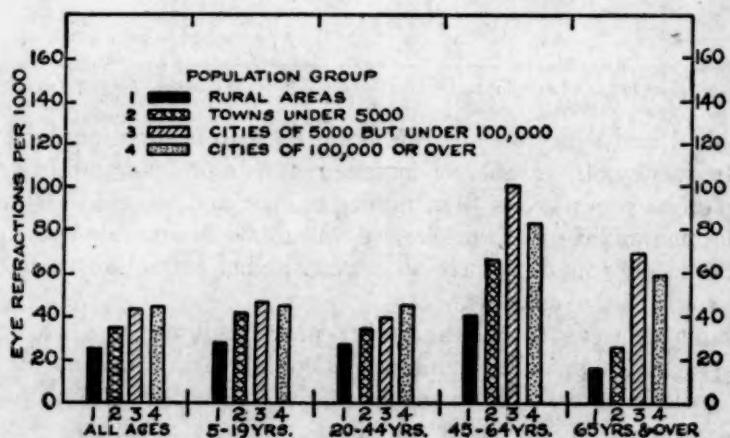


FIGURE 5.—Eye refractions per 1,000 persons of specific ages in cities, towns, and rural areas—canvassed white families in 18 States during 12 consecutive months, 1928-31.

45 per 1,000 as compared with 26 in the rural areas. Towns under 5,000 in population fall between these extremes, with 36 refractions per 1,000 persons in the course of the year. The rates for cities over 100,000 and for cities of 5,000 to 100,000 population are approximately the same.

In the various age groups, the rates in towns under 5,000 are lower than those in either of the city groups, and the rates in rural areas are below those for towns under 5,000 in all groups except under 5 years, where the numbers are too small to be of any significance. It seems probable that these differences reflect variations in the character of the occupations in the different communities as well as income, custom, and other factors that influence the extent of medical and eye care.

TABLE 5.—*Eye refractions per 1,000 persons in urban and rural communities—canvassed white families in 18 States during 12 consecutive months, 1928–31*

Population of city or town	Age						
	All ages	5 years and over	Under 5	5-19	20-44	45-64	65 and over
Refractions per 1,000 population per year							
Cities of 100,000 or over.....	44.9	51.1	4.58	45.8	44.4	83.6	59.3
Cities of 5,000 but under 100,000.....	44.2	51.9	3.26	47.3	39.7	100.7	69.9
Towns under 5,000.....	36.0	42.2	.88	41.8	35.5	66.3	26.0
Rural areas.....	25.9	29.2	1.14	28.5	26.1	41.1	16.4
Number of refractions							
Cities of 100,000 or over.....	645	620	9	211	246	152	20
Cities of 5,000 but under 100,000.....	428	422	5	160	137	112	13
Towns under 5,000.....	273	271	1	112	92	61	6
Rural areas.....	179	175	1	76	55	40	4
Population (years of life)							
Cities of 100,000 or over.....	14,351	12,304	1,963	4,609	5,540	1,818	337
Cities of 5,000 but under 100,000.....	9,694	8,128	1,535	3,381	3,449	1,112	186
Towns under 5,000.....	7,585	6,418	1,134	2,678	2,589	920	231
Rural areas.....	6,914	5,994	881	2,665	2,111	974	244

**GENERAL PHYSICAL EXAMINATIONS AND SICKNESS AND THE FREQUENCY OF REFRACTIONS**

Because the general physical examination usually includes an eye test and a recommendation that an oculist be consulted in cases where visual defect is found, it might be expected that there would be more eye refractions among those who had a general physical examination during the year. The eye refractions under consideration do not include those made as a part of a physical examination.

Table 6 and figure 6 show the proportion of persons who had refractions among those who had and who did not have general physical examinations, with each of these classes further subdivided according to whether the individual was sick during the year under observation.

TABLE 6.—*Eye refractions<sup>1</sup> among persons classified according to whether they had a physical examination and according to whether they were sick during the year under observation—canvassed white families in 18 states during 12 consecutive months, 1928-31*

Physical examination and annual family income	Age and sickness during year											
	All ages 5 years and over			5-19 years			20-44 years			45 years and over		
	Total	Not sick	Sick	Total	Not sick	Sick	Total	Not sick	Sick	Total	Not sick	Sick
	Percentage of persons who had an eye refraction during the year <sup>2</sup>											
<b>All incomes:</b>												
Had a physical examination...	10.5	0.7	11.0	7.6	7.6	7.6	15.2	14.6	15.6	17.4	14.9	18.6
Had no physical examination...	4.2	2.7	5.6	3.7	2.8	4.6	3.6	2.3	4.9	6.6	3.9	9.2
<b>Family income under \$3,000:</b>												
Had a physical examination...	7.5	7.1	7.7	5.4	5.5	5.4	14.1	14.7	13.7	15.7	10.5	17.6
Had no physical examination...	3.0	2.1	4.0	2.8	2.1	3.6	2.6	14.8	3.5	4.5	2.9	6.2
<b>Family income \$3,000 or over:</b>												
Had a physical examination...	15.3	14.0	16.1	13.4	13.0	13.7	16.2	14.5	17.1	18.1	16.4	19.0
Had no physical examination...	7.4	4.8	9.7	6.6	5.5	7.4	6.2	3.6	8.7	10.8	6.2	14.6
Percentage of persons who had an eye refraction during the year <sup>2</sup>												
<b>Number of persons with eye refractions</b>												
<b>All incomes:</b>												
Had a physical examination...	206	74	132	99	41	58	67	22	45	40	11	29
Had no physical examination...	1,274	423	850	438	168	270	468	150	318	368	105	263
<b>Family income under \$3,000:</b>												
Had a physical examination...	91	34	57	51	21	30	29	11	18	11	2	9
Had no physical examination...	691	246	445	262	102	160	260	91	169	169	53	116
<b>Family income \$3,000 or over:</b>												
Had a physical examination...	115	40	75	48	20	28	38	11	27	29	9	20
Had no physical examination...	583	177	405	176	66	110	208	59	149	190	52	147
Total number of persons under observation <sup>2</sup>												
<b>All incomes:</b>												
Had a physical examination...	1,969	764	1,203	1,299	539	760	440	151	289	230	74	155
Had no physical examination...	30,671	15,399	15,272	11,951	6,050	5,901	13,151	6,647	6,501	5,560	2,702	2,867
<b>Family income under \$3,000:</b>												
Had a physical examination...	1,217	479	738	941	385	556	206	75	131	70	19	51
Had no physical examination...	22,809	11,741	11,068	9,269	4,854	4,415	9,820	5,028	4,792	3,720	1,859	1,861
<b>Family income \$3,000 or over:</b>												
Had a physical examination...	752	285	467	358	154	204	234	76	158	100	55	105
Had no physical examination...	7,862	3,658	4,204	2,682	1,196	1,486	3,331	1,619	1,712	1,849	843	1,006

<sup>1</sup> Exclusive of eye refractions done as a part of the physical examination. A few cases of repair of glasses without refraction are not separated from refractions but their numbers are insufficient to affect the results.

<sup>2</sup> All except about 1.5 percent were under observation during the whole 12 months.

In each age group a higher proportion of those persons who had a physical examination also had an eye refraction than of those who had no physical examination. Among persons who had physical examinations, about as many of those who were not sick had refractions as of those who were sick. However, among individuals who did not

have physical examinations during the year, a higher proportion of those who were sick had an eye refraction than of those who were not sick. Considering all ages in this nonexamined group, twice as many of the sick had a refraction as of those who were not sick; in each of the three age groups the relative difference is of about the same order of magnitude.<sup>5</sup> Reference to table 6 indicates that in each of the

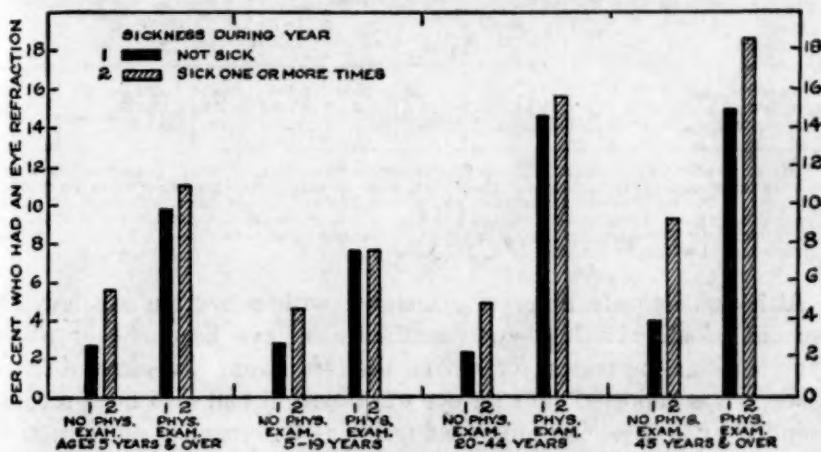


FIGURE 6.—Eye refractions among persons classified according to whether they had a physical examination and according to whether they were sick during the year under observation—canvassed white families in 18 States during 12 consecutive months, 1928-31.

two income groups (under \$3,000 and \$3,000 and over per year) the same general picture is shown. The interpretation suggested by the data is that a physical examination, which usually includes an eye test, is likely to lead to a special eye refraction for glasses among a certain proportion of those examined; among those not examined, the general tendency to consider other impairments after an illness and the contact with the attending physician results in more refractions among those sick than among those not sick during the year.

#### REASONS THAT BROUGHT PERSON TO HAVE A REFRACTION

Of the 1,525 eye refractions made in this group in the course of the year, only 84, or 6 percent, were reported as done during or immediately following an illness which constituted the reason for having the examination. In 68, or 81 percent of these 84 cases, the illness was an eye condition.

<sup>5</sup> Those families whose physical examination records were complete would also be likely to render complete reports of eye refractions. However, it does not appear probable that this factor is important enough to account for the large and consistent differences in the various age and income groups. Moreover, those who reported sickness but did not report examinations do not have a high refraction rate.

TABLE 7.—*Reasons for having eye refractions—canvassed white families in 18 States during 12 consecutive months, 1928-31*

	Percentage of refractions done because of—					Number of refractions done because of—				
	All known reasons	Headache or other symptoms <sup>1</sup>	Recommended by physician, nurse, or teacher <sup>1</sup>	Regular school or other examination	Breakage of lenses	All known reasons	Headache or other symptoms <sup>1</sup>	Recommended by physician, nurse, or teacher <sup>1</sup>	Regular school or other examination	Breakage of lenses
All eye refractions...	100.0	67.6	17.3	13.2	1.9	1,460	987	253	192	28
Lenses bought...	100.0	67.8	17.3	12.7	2.2	1,294	878	224	164	28
No lenses bought...	100.0	65.7	17.5	16.9	-----	166	109	29	28	-----

<sup>1</sup> "Headache or other symptoms" and also "recommended by a physician, nurse, or teacher" are classified as headache or other symptoms. Of the 987 who went for examination because of headache or other symptoms, in 126 cases the refraction was also recommended by a physician, nurse, or teacher. The total of examinations done on recommendation of a physician, nurse, or teacher was therefore 370, or 26 percent of all refractions. The corresponding figure for refractions and lenses bought was 25.6 percent, and for no lenses bought it was 28.9 percent.

Although definite illnesses associated with refraction are few, 68 percent of all who had eye examinations gave headache or other symptoms as the reason for having the refraction. In some of these cases it was reported that an eye examination had also been recommended by a physician, nurse, or teacher—9 percent of all refraction cases gave this joint reason for having the examination. Another 17 percent gave the recommendation of a physician, nurse, or teacher as the sole reason for having the refraction. Such a recommendation may have been made because symptoms or conduct that suggested eye troubles had been noted, or because the patient had been unable to read the test letters in a school or other physical examination. Thirteen percent of all refractions were designated as regular periodic examinations, and 2 percent were done when lenses already being worn were broken.

#### TYPE OF PRACTITIONER MAKING THE REFRACTION

Unlike health examinations and immunizations, eye refractions are largely in the hands of private practitioners. Less than 3 percent of all refractions considered in this study were made in public clinics, including those done by school physicians. The proportion in public clinics is greater among children; 5 percent of all refractions for persons under 20 years of age were done in public clinics, but only 0.5 percent of those for persons 45 years old and over (table 8).

TABLE 8.—*Proportion of eye refractions that were done by public clinics or other public facilities—canvassed white families in 18 States during 12 consecutive months, 1928-31*

Age in years	Percentage of refractions done in public clinics <sup>1</sup>		Number of refractions done in public clinics <sup>1</sup>		Total number of refractions	
	All refractions	Refractions and lenses bought	All refractions	Refractions and lenses bought	All refractions	Refractions and lenses bought
All ages <sup>2</sup>	2.7	2.5	41	34	1,525	1,345
Under 20	5.0	5.0	29	24	575	481
20-44	1.9	1.7	10	8	530	480
45 and over	.5	.5	2	2	408	372

<sup>1</sup> Refractions done by school physicians are included with those done in public clinics.

<sup>2</sup> "All ages" includes a few of unknown age.

Table 9 shows the number and percent of all refractions that were made by eye physicians (specialists), by physicians not designated as specialists, and by optometrists or opticians. In this tabulation refractions made in public clinics are included with those by physicians unless it was indicated that a specialist in the clinic made the examination. Of all refractions, 10 percent were reported as made by eye specialists. This figure must be considered a minimum, since a private specialist may have been reported merely as a physician and the work of a specialist in a clinic may have been reported as clinic service without further information. Fifty-six percent of the refractions were reported as made by physicians not designated as specialists, or a total of nearly two thirds of the refractions made by physicians (including eye physicians). The other refractions (35 percent) were made by optometrists or opticians. The high proportion of refractions reported as done by physicians suggests the possibility that optometrists were sometimes reported by the families as physicians, because they are frequently designated by the title "doctor." No data are available for comparison and there is no way to check the accuracy of the statement on the schedules.

TABLE 9.—*Proportion of eye refractions done by different types of practitioners and the proportion resulting in the purchase of lenses—canvassed white families in 18 States during 12 consecutive months, 1928-31*

	Percentage of all refractions that were done by—				Percentage of refractions by certain practitioners that resulted in purchase of lenses				Number of refractions done by—			
	All known practitioners	Eye physician (specialist) <sup>1</sup>	Other physician	Optometrist or optician	All known practitioners	Eye physician (specialist) <sup>1</sup>	Other physician	Optometrist or optician	All known practitioners	Eye physician (specialist) <sup>1</sup>	Other physician	Optometrist or optician
All eye refractions	100.0	9.7	55.8	34.5	100.0	100.0	100.0	100.0	1,506	146	840	520
Lenses bought	100.0	9.0	54.7	36.3	88.3	82.2	86.5	92.9	1,330	120	727	483
No lenses bought	100.0	14.8	64.2	21.0	11.7	17.8	13.5	7.1	176	26	113	37

<sup>1</sup> Examinations by eye specialists in clinics are included with those by other specialists; other examinations in clinics are included with those by other physicians.

The middle section of table 9 shows the percent of refractions, by each type of practitioner, that resulted in the purchase of lenses. For the group as a whole, 88 percent of the refractions resulted in the procuring of lenses by purchase or gift. It is significant that among those examined by eye physicians (specialists) only 82 percent bought lenses as compared with 87 percent for other physicians and 93 percent for optometrists and opticians. The lower percentages for specialists and physicians suggest that eye and related physical troubles that are too complicated to be remedied solely by the fitting of lenses went largely to these practitioners. On the other hand, the high percentage who procured lenses among those examined by optometrists or opticians may indicate that these practitioners prescribe glasses for nearly all patients. However, the same person here prescribes and dispenses lenses; under these circumstances some patients might procure glasses who would neglect to go to an optician even after receiving a prescription from a physician.

#### SUMMARY

Records of all medical and eye care were obtained on 8,758 white families in 130 localities in 18 States for a period of 12 consecutive months between February 1928 and June 1931. Each family was visited at intervals of 2 to 4 months to obtain the data.

The surveyed families include representation from nearly all geographic sections, from rural, urban, and metropolitan areas, from all income classes, and of both native- and foreign-born persons. The proportions of these various elements included are not identical with those in the population of the United States, but the variations are not generally large. In other respects also the surveyed group is not dissimilar to families in the general white population of the United States. In the course of the year under observation there were 40 eye refractions per 1,000 persons. In addition there were 54 complete examinations per 1,000 which would presumably include some kind of a test of the eyes.

There were 35 refractions per 1,000 in which the patient procured lenses by purchase or gift as a result of the examination. Lenses were procured in 88 percent of all refractions. There were also 3.1 cases per 1,000 of glasses repaired or lenses replaced without refraction.

The frequency of refractions varies greatly with age (fig. 1). During school ages, the frequency is greater than before or after those ages. A second peak with the highest rates comes at 50-54 years.

The frequency of refractions is greater among females than among males at all ages above 10 years (fig. 1). The abrupt increase in refractions in middle life that apparently parallels the onset of presbyopia begins 5 years earlier among women than among men. An analysis of published data on visual defects as found by the Snellen and

Jaeger tests indicates that the annual number of new cases of defective vision per 1,000 persons reaches its peak nearly 5 years earlier among women than among men (fig. 2).

Fewer refractions were made among married than among single women of the same ages. More refractions were made among married than among single men, but the difference was small.

Refractions are more frequent in families with larger incomes than in the poorer classes (fig. 3).

Refractions are more frequent in professional and clerical occupations than among skilled and unskilled laborers (fig. 4).

Refractions are more frequent in cities than in rural areas (fig. 5).

A larger proportion of persons who had a general physical examination also had a special eye refraction than of those who had no examination. Among those who had no physical examination, a larger proportion of those who were sick had an eye refraction than of those who were not sick (fig. 6).

Headache or other symptoms were given as the reason for the refraction in 68 percent of the cases.

Less than 3 percent of all eye refractions were done in public clinics. This is in contrast to physical examinations, of which 55 percent were done in public clinics.

Ten percent of all refractions were reported as made by eye physicians (specialists), 56 percent by other physicians, and 34 percent by optometrists or opticians.

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#### COURT DECISION ON PUBLIC HEALTH

*Municipality not permitted to violate its zoning ordinance in erection of garbage-disposal plant.*—(New York Supreme Court, Appellate Division; *O'Brien et al. v. Town of Greenburgh et al.*, 268 N.Y.S. 173; decided Dec. 18, 1933.) An injunction was sought by the plaintiffs, who were property owners and householders in the town of Greenburgh, to prevent the town from erecting a garbage-disposal plant upon property owned by it and situated in a zoning residence A district. Such district, under a zoning ordinance adopted by the town, was the most highly restricted area in the town, and the erection of the contemplated disposal plant in such area would have been a violation of the ordinance. The town had legislative authority for the enactment of a zoning ordinance and for the collection and disposal of garbage, refuse, and ashes.

The appellate court said that, briefly, the question presented was whether the town was precluded by its zoning ordinance from exercising the function of disposing of its garbage as proposed by it within the residence A district. The question was said to turn upon this proposition of law—whether the disposition of garbage and refuse constituted a corporate or a governmental function. "If corporate", said the court, "the plaintiffs are entitled to the relief sought, for the reason that in that capacity the town is bound equally with all other persons, whether individual or corporate, by the terms of its own ordinance. If governmental, the question of plaintiffs' rights may not be determined in advance of the construction and operation of the incinerator, especially in view of the refusal by the learned trial court to find upon the evidence that the operation of the plant will constitute a nuisance *per se*. With that ruling we are not inclined to interfere." The conclusions reached were that the disposal of gar-

bage by the town was a corporate or proprietary function and that the zoning ordinance as it then stood precluded the proposed construction by the town within the residence A district.

### DEATHS DURING WEEK ENDED MAY 12, 1934

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended May 12, 1934	Correspond- ing week, 1933
<b>Data from 86 large cities of the United States:</b>		
Total deaths.....	8,511	7,743
Deaths per 1,000 population, annual basis.....	11.9	10.8
Deaths under 1 year of age.....	637	578
Deaths under 1 year of age per 1,000 estimated live births.....	59	148
Deaths per 1,000 population, annual basis, first 19 weeks of year.....	12.5	11.9
<b>Data from industrial insurance companies:</b>		
Policies in force.....	67,788,091	68,204,929
Number of death claims.....	13,538	13,435
Death claims per 1,000 policies in force, annual rate.....	10.4	10.8
Death claims per 1,000 policies, first 19 weeks of year, annual rate.....	11.0	10.8

<sup>1</sup> Data for 81 cities.

## PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

### UNITED STATES

#### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

#### Reports for Weeks Ended May 19, 1934, and May 20, 1933

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 19, 1934, and May 20, 1933*

Division and State	Diphtheria		Influenza		Measles		Meningoencephalitis	
	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933
<b>New England States:</b>								
Maine	1		1	2	10	1	0	0
New Hampshire					79	37	0	0
Vermont		1			65	34	0	0
Massachusetts	11	32			1,251	473	0	0
Rhode Island		2			14	1	0	0
Connecticut	3	5	1	3	156	281	1	1
<b>Middle Atlantic States:</b>								
New York	56	60	16	11	1,089	2,428	2	6
New Jersey	15	19	27	2	817	1,073	1	0
Pennsylvania	61	51			4,014	1,296	4	2
<b>East North Central States:</b>								
Ohio	12	13	10	11	1,689	629	6	0
Indiana	9	21	12	25	1,391	291	1	2
Illinois	33	20	21	25	2,346	953	4	14
Michigan	14	16	2	5	322	915	2	3
Wisconsin	1	1	30	25	2,934	355	1	3
<b>West North Central States:</b>								
Minnesota	7	3	1	1	340	778	0	1
Iowa <sup>1</sup>	11	6			368	76	3	0
Missouri	21	16	31		520	234	4	2
North Dakota	2				122	64	0	1
South Dakota	3		1		362	19	0	0
Nebraska	9	2			286	275	0	0
Kansas	8	9	2	1	641	282	0	2
<b>South Atlantic States:</b>								
Delaware	1				95	8	0	0
Maryland <sup>2</sup>	4	2	4	6	2,275	30	0	0
District of Columbia	2	1	1		75	19	0	0
Virginia <sup>3</sup>	18	5			1,375	365	0	1
West Virginia	6	6	18	1	154	100	3	0
North Carolina	15	11	11	1	1,223	739	1	0
South Carolina	1	8	158	162	300	415	0	0
Georgia <sup>4</sup>	5	2			385	178	0	0
Florida <sup>4</sup>	3	4			320	19	0	0

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 19, 1934, and May 20, 1933—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933
<b>East South Central States:</b>								
Kentucky	4	3	8	6	360	35	0	0
Tennessee	3	4	54	21	220	86	5	2
Alabama	3	8	20	4	834	74	1	0
Mississippi	4	6					1	0
<b>West South Central States:</b>								
Arkansas	5	1	6		54	227	1	0
Louisiana	14	5	6	5	205	42	0	0
Oklahoma	6	1	26	10	175	223	1	3
Texas	39	49	115	92	530	1,088	0	1
<b>Mountain States:</b>								
Montana	2	2	6	3	97	86	1	0
Idaho	1			2	34	16	0	0
Wyoming	1				91	15	0	0
Colorado	6	2		27	560	3	0	0
New Mexico	2	3		2	164	8	0	0
Arizona	1			2	17	135	0	0
Utah	2	1			83	17	0	0
<b>Pacific States:</b>								
Washington	4	10			132	84	1	1
Oregon		3	24	46	75	55	0	0
California	34	37	26	28	746	1,221	0	3
<b>Total</b>	<b>463</b>	<b>452</b>	<b>638</b>	<b>530</b>	<b>29,434</b>	<b>15,653</b>	<b>44</b>	<b>47</b>

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933
<b>New England States:</b>								
Maine	0	0	13	11	0	0	4	3
New Hampshire	0	0	15	22	0	0	0	0
Vermont	0	0	11	10	0	0	3	0
Massachusetts	0	0	261	363	0	0	3	5
Rhode Island	0	0	18	28	0	0	0	0
Connecticut	0	0	59	112	0	0	1	3
<b>Middle Atlantic States:</b>								
New York	0	1	791	653	0	1	7	6
New Jersey	0	0	186	208	0	0	2	1
Pennsylvania	1	0	617	728	0	0	4	8
<b>East North Central States:</b>								
Ohio	0	2	478	421	0	2	5	8
Indiana	0	1	92	71	1	0	6	5
Illinois	0	1	544	435	1	5	5	12
Michigan	1	0	804	466	1	0	2	2
Wisconsin	0	0	741	111	21	6	1	2
<b>West North Central States:</b>								
Minnesota	0	0	65	101	7	0	2	3
Iowa	1	0	56	25	9	16	1	1
Missouri	0	0	55	56	16	0	17	5
North Dakota	0	0	58	5	2	0	1	1
South Dakota	0	0	13	5	1	0	0	0
Nebraska	0	0	26	25	9	0	0	0
Kansas	0	1	35	31	4	1	2	5
<b>South Atlantic States:</b>								
Delaware	0	1	3	15	0	0	0	0
Maryland	0	0	50	95	0	0	10	2
District of Columbia	0	0	17	8	0	0	2	0
Virginia	0	1	25	35	0	0	5	5
West Virginia	0	0	93	7	2	0	3	4
North Carolina	0	2	17	39	0	0	1	9
South Carolina	0	0	2	0	0	2	16	20
Georgia	0	0	4	9	0	0	20	11
Florida	0	0		2	0	0	3	1

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 19, 1934, and May 20, 1933—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933	Week ended May 19, 1934	Week ended May 20, 1933
<b>East South Central States:</b>								
Kentucky	0	0	31	6	0	0	5	2
Tennessee	0	1	15	60	0	0	4	4
Alabama <sup>1</sup>	0	1	9	10	0	0	6	2
Mississippi	0	0	—	4	0	1	5	6
<b>West South Central States:</b>								
Arkansas	1	0	3	2	8	3	1	0
Louisiana <sup>1</sup>	0	1	10	8	1	1	19	6
Oklahoma <sup>2</sup>	0	0	2	10	4	2	1	1
Texas <sup>1</sup>	1	0	38	57	47	28	8	25
<b>Mountain States:</b>								
Montana <sup>3</sup>	0	0	3	3	2	1	0	1
Idaho <sup>4</sup>	2	0	1	1	1	12	0	1
Wyoming <sup>3</sup>	0	1	17	3	0	1	1	0
Colorado <sup>4</sup>	0	0	23	32	1	4	0	0
New Mexico	0	0	14	5	0	0	2	3
Arizona	2	0	7	8	0	1	0	1
Utah <sup>3</sup>	0	0	7	6	1	0	0	0
<b>Pacific States:</b>								
Washington	1	0	56	50	0	8	3	2
Oregon <sup>4</sup>	0	0	32	20	0	11	4	1
California <sup>4</sup>	36	4	180	146	1	25	18	8
<b>Total</b>	46	18	5,597	4,518	140	132	202	179

<sup>1</sup> New York City only.<sup>2</sup> Week ended earlier than Saturday.<sup>3</sup> Rocky Mountain spotted fever, week ended May 19, 1934, 29 cases, as follows: Virginia, 4; Montana, 5; Idaho, 5; Wyoming, 6; Colorado, 3; Oregon, 6.<sup>4</sup> Typhus fever, week ended May 19, 1934, 21 cases, as follows: Virginia, 1; Georgia, 7; Florida, 2; Alabama, 2; Louisiana, 1; Texas, 7; California, 1.<sup>4</sup> Exclusive of Oklahoma City and Tulsa.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- goec- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Meas- sles	Pel- lagra	Poli- omyelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>April 1934</i>										
Alabama	4	58	200	125	3,284	36	0	28	2	10
Illinois	42	138	73	20	8,024	—	5	2,426	21	18
Maryland	24	50	—	—	8,489	1	0	294	0	10
Michigan	3	56	7	7	896	—	2	3,355	4	8
Minnesota	3	40	2	—	1,360	—	1	286	35	5
Montana	1	6	855	—	291	—	2	49	4	2
New Mexico	2	19	43	11	591	1	1	58	1	12
Ohio	15	102	173	2	5,615	—	2	3,640	2	16
Rhode Island	—	2	—	—	40	—	0	69	0	0
South Carolina	55	1,748	600	2	2,618	131	2	30	4	16
South Dakota	2	15	—	—	1,697	—	2	37	27	1
Virginia	10	64	204	2	5,713	12	0	112	1	17
West Virginia	11	61	106	—	477	—	1	333	1	19

April 1934	Cases	Jaundice, epidemic: Minnesota	Cases	Tetanus:	Cases
Actinomycosis:		Lead poisoning:	24	Alabama	1
South Dakota	1	Illinois	5	Illinois	5
Anthrax:		Ohio	11	Ohio	4
South Dakota	1	Lethargic encephalitis:		Montana	1
Chicken pox:		Alabama	5	Trachoma:	
Alabama	196	Illinois	3	Illinois	3
Illinois	2,068	Michigan	5	Maryland	1
Maryland	347	Minnesota	1	Montana	3
Michigan	1,454	Ohio	2	Ohio	6
Minnesota	598	South Carolina	3	Trichinosis:	
Montana	156	Virginia	5	Illinois	1
New Mexico	64	Mumps:		Maryland	1
Ohio	1,794	Alabama	159	Ohio	2
Rhode Island	132	Illinois	2,448	Tularemia:	
South Carolina	172	Maryland	204	Alabama	3
South Dakota	54	Michigan	878	Michigan	8
Virginia	341	Montana	37	Minnesota	2
West Virginia	145	New Mexico	42	Montana	1
Conjunctivitis:		Ohio	436	Ohio	2
New Mexico	1	Rhode Island	3	South Carolina	3
Diarrhea:		South Carolina	415	West Virginia	1
South Carolina	290	South Dakota	95	Typhus fever:	
Diarrhea and dysentery:		Virginia	208	Alabama	7
Virginia	63	West Virginia	14	Maryland	1
Diarrhea and enteritis:		Ophthalmia neonatorum:		Undulant fever:	
Ohio (under 2 years)	8	Alabama	1	Illinois	8
Dysentery:		Illinois	2	Maryland	7
Alabama (amoebic)	2	Ohio	72	Michigan	5
Illinois (amoebic)	34	South Carolina	15	Minnesota	10
Illinois (amoebic carriers)	125	Virginia	1	Montana	2
Illinois (bacillary)	4	Paratyphoid fever:		Ohio	3
Illinois (bacillary carriers)	1	Michigan	1	Rhode Island	1
Maryland	5	Puerperal septicemia:		South Carolina	1
Michigan	10	Illinois	3	South Dakota	1
Minnesota (amoebic)	7	New Mexico	3	Virginia	3
Minnesota (bacillary)	1	Ohio	4	Vincent's infection:	
Ohio	3	Rabies in animals:		Illinois	177
Virginia (amoebic)	1	Alabama	100	Maryland	5
Food poisoning:		Illinois	29	Michigan	27
New Mexico	1	Maryland	2	Montana	1
Ohio	11	South Carolina	39	Whooping cough:	
German measles:		Rocky Mountain spotted fever:		Alabama	388
Alabama	433	Montana	29	Illinois	1,957
Illinois	903	South Dakota	1	Maryland	811
Maryland	192	Scabies:		Michigan	1,356
Michigan	355	Maryland	1	Minnesota	296
Montana	7	Montana	10	Montana	80
New Mexico	209	Septic sore throat:		New Mexico	178
Ohio	1,681	Illinois	31	Ohio	2,549
Rhode Island	1	Maryland	9	Rhode Island	141
South Carolina	1	Michigan	58	South Carolina	659
Hookworm disease:		Minnesota	1	South Dakota	75
South Carolina	81	Montana	5	Virginia	393
Impetigo contagiosa:		New Mexico	4	West Virginia	573
Maryland	7	Ohio	245		
Montana	11	South Dakota	3		
		Virginia	39		

#### PLAQUE-INFECTED GROUND SQUIRRELS IN KERN AND TULARE COUNTIES, CALIF.

The Director of Public Health of the State of California has reported that from May 11 to May 18, 1934, inclusive, 8 lots of ground squirrels, including 39 animals, from Kern and Tulare Counties, in the interior of California, were found to be plague-infected.

## WEEKLY REPORTS FROM CITIES

City reports for week ended May 12, 1934

This table summarizes the reports received regularly from a selected list of 121 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diph- theria cases	Influenza		Meas- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths all causes
		Cases	Deaths								
Maine:											
Portland	0		0	0	2	3	0	1	1	10	21
New Hampshire:											
Concord	0		0	9	1	2	0	0	0	0	9
Nashua	0			38		5	0		0	0	
Vermont:											
Barre	0		0	0	0	0	0	1	2	0	4
Burlington	0		0	1	0	1	0	0	0	5	7
Massachusetts:											
Boston	3		0	195	23	48	0	14	1	67	235
Fall River	1		0	0	1	2	0	3	0	6	27
Springfield	0		0	2	0	2	0	1	0	1	30
Worcester	0		0	0	9	10	0	4	0	17	50
Rhode Island:											
Pawtucket	0		0	0	0	2	0	0	0	0	17
Providence	0		0	8	4	10	0	0	0	22	50
Connecticut:											
Bridgeport	0		1	1	3	21	0	1	0	1	47
Hartford	0		0	1	2	15	0	0	1	0	40
New Haven	0		1	1	2	1	0	0	0	9	44
New York:											
Buffalo	1		0	124	21	22	0	6	0	19	154
New York	31	9	8	322	154	356	0	94	4	130	1,572
Rochester	4		0	1	5	60	0	5	0	7	65
Syracuse	0		0	55	5	3	0	1	0	79	64
New Jersey:											
Camden	1		0	36	7	10	0	3	0	4	36
Newark	0	5	0	32	8	19	0	6	0	47	111
Trenton	0		0	55	1	14	0	4	0	3	28
Pennsylvania:											
Philadelphia	5	2	0	431	53	120	0	25	0	46	510
Pittsburgh	6	2	2	333	23	34	0	7	0	29	152
Reading	1		0	6	0	6	0	0	0	6	15
Scranton	0			4		3	0		0	4	
Ohio:											
Cincinnati	4	16	4	5	16	38	0	10	0	6	149
Cleveland	5	16	0	200	26	151	0	14	1	94	214
Columbus	1	2	2	12	5	40	0	10	0	29	96
Toledo	0	1	1	129	9	40	0	1	0	98	70
Indiana:											
Fort Wayne	6		0	39	5	15	0	5	0	3	38
Indianapolis	0		1	446	0	19	0	3	1	40	
South Bend	0		0	14	1	4	0	0	0	0	13
Terre Haute	1		0	0	0	1	0	0	0	0	17
Illinois:											
Chicago	9	1	2	751	50	278	0	38	1	181	656
Cicero											4
Springfield	0	2	0	41	7	3	0	2	0	28	29
Michigan:											
Detroit	4	2	1	121	41	138	0	27	1	144	346
Flint	0		0	18	8	76	0	1	0	16	42
Grand Rapids	0		0	10	3	17	0	1	0	1	45
Wisconsin:											
Kenosha	0			3		10	0		0	2	13
Milwaukee	0	1	1	78	5	124	0	2	0	72	98
Racine	0		0	2	0	11	0	0	0	2	14
Superior	0		0	3	0	0	0	0	0	0	9
Minnesota:											
Duluth	0		0	0	2	0	0	0	0	1	11
Minneapolis	7		0	10	5	24	0	1	0	29	83
St. Paul	0		0	3	10	16	0	1	0	21	74
Iowa:											
Davenport	0			30		3	0		0	1	
Des Moines	0			0		18	1		0	0	27
Sioux City	4			154		0	0		0	1	
Waterloo	0			0		1	0		0	1	
Missouri:											
Kansas City	4		0	4	20	28	0	9	0	15	107
St. Joseph	3		0	1	4	1	0	2	0	0	53
St. Louis	24	2	0	29	17	20	1	12	2	66	237

## City reports for week ended May 12, 1934—Continued

State and city	Diph- theria cases	Influenza		Meas- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
North Dakota:											
Fargo	0	0	12	1	2	0	0	0	0	9	1
Grand Forks	0		1		1	0			0	1	
South Dakota:											
Aberdeen	0		133		0	0			0	18	
Sioux Falls	0		3		0	0			0	0	8
Nebraska:											
Omaha	4	0	133	7	12	9	3	3	7	62	
Kansas:											
Topeka	0	0	26	1	0	0	0	0	0	44	6
Wichita	0	0	74	3	1	0	0	0	1	37	21
Delaware:											
Wilmington	0	0	38	7	2	0	2	1	1	1	38
Maryland:											
Baltimore	3	3	0	2,045	32	24	0	14	13	108	229
Cumberland	0	0	6	2	2	0	0	0	0	0	10
Federick											
District of Columbia:											
Washington	11	0	94	15	10	0	7	1	25	156	
Virginia:											
Lynchburg	1	0	120	1	1	0	0	0	0	15	13
Richmond	0	0	262	4	2	0	3	0	0	1	36
Roanoke	1	0	9	1	1	0	0	0	0	4	15
West Virginia:											
Charleston	1	1	0	20	2	1	0	0	0	0	16
Huntington	3		0		12	0				0	
Wheeling	1	0	10	3	32	0	0	0	0	7	14
North Carolina:											
Raleigh	0	0	13	0	0	0	1	0	0	18	15
Wilmington	0	0	1	2	0	0	2	0	0	11	10
Winston-Salem	0	0	0	0	0	0	0	0	0	12	11
South Carolina:											
Charleston	0	5	0	27	2	0	0	0	0	1	19
Columbia	0	0	0	2	0	0	0	0	0	0	10
Greenville	0	0	1	1	0	0	0	0	0	4	12
Georgia:											
Atlanta	1	1	0	29	10	4	0	8	0	3	89
Brunswick	0	0	21	0	0	0	0	0	0	0	3
Savannah	0	10	0	78	3	0	0	0	0	1	31
Florida:											
Miami	0	2	0	210	0	0	0	3	0	1	32
Tampa	3	0	106	0	0	0	2	1	0	0	23
Kentucky:											
Ashland	0		55		0	0			0	5	
Lexington	0	0	75	1	4	0	2	0	0	15	21
Louisville	4	1	0	84	5	17	0	1	0	38	81
Tennessee:											
Memphis	1		1	38	10	2	0	5	0	14	76
Nashville	1		1	9	4	2	0	2	1	13	
Alabama:											
Birmingham	1		1	37	5	0	0	3	0	0	69
Mobile	0		0	2	2	0	1	0	0	0	23
Montgomery	1		64		0	0			0	2	
Arkansas:											
Fort Smith	0		0		2	0			0	1	
Little Rock	0	0	4	3	0	0	3	0	0	1	6
Louisiana:											
New Orleans	19	3	3	47	17	15	1	11	2	2	147
Shreveport	0	0	3	2	0	0	1	0	0	2	31
Oklahoma:											
Tulsa	0		4		0	0			0	2	
Texas:											
Dallas	1	1	1	0	3	2	1	0	0	29	68
Fort Worth	0	1	1	2	2	0	1	1	1	7	34
Galveston	1	0	0	0	1	1	2	0	0	0	11
Houston	3	0	8	10	3	3	6	0	0	0	76
San Antonio	1	4	13	10	1	0	9	0	0	0	86
Montana:											
Billings	0	0	0	0	0	0	0	0	0	5	5
Great Falls	0	0	10	1	0	0	0	0	0	1	10
Helena	0	0	0	0	2	0	0	0	0	0	2
Missoula	0	0	0	1	0	0	0	0	0	0	9
Idaho:											
Boise	0	0	4	1	0	1	0	0	0	32	8
Colorado:											
Denver	7	29	0	635	3	12	0	2	0	79	57
Pueblo	0	0	33	0	1	0	0	0	0	15	6

## City reports for week ended May 12, 1934—Continued

State and city	Diph- theria cases	Influenza		Mea- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
New Mexico:											
Albuquerque	0	0	0	45	2	0	0	6	0	8	21
Utah:											
Salt Lake City	0	0	0	21	5	8	4	2	0	91	34
Nevada:											
Reno	0	0	0	1	1	0	0	0	0	0	4
Washington:											
Seattle	0	0	0	6	1	30	0	8	0	67	79
Spokane	0	1	1	11	0	2	0	0	0	22	22
Tacoma	1	0	0	40	3	2	0	2	0	0	28
Oregon:											
Portland	0	0	0	11	1	24	1	4	0	11	74
Salem	0	1	0	0	0	1	0	0	0	3	—
California:											
Los Angeles	18	14	1	39	9	35	0	27	2	65	300
Sacramento	1	0	0	9	0	4	0	6	0	10	23
San Francisco	1	0	0	343	4	19	0	10	0	17	145

State and city	Meningococcus meningitis		Polio- mye- litis cases	State and city	Meningococcus meningitis		Polio- mye- litis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:							
Boston	1	0	0	Missouri—Continued.			
New York:	2	1	2	St. Louis	1	1	0
New York	2	1	2	North Dakota:			
Ohio:	0	1	0	Grand Forks	1	1	0
Cincinnati	0	1	0	Tennessee:			
Illinois:	5	3	0	Memphis	1	0	0
Chicago	5	3	0	Alabama:			
Michigan:	1	0	0	Birmingham	1	1	0
Detroit	1	0	0	Louisiana:			
Grand Rapids	1	1	0	New Orleans	2	1	0
Iowa:				Washington:			
Davenport	0	0	1	Seattle	0	1	0
Sioux City	1	—	0	California:			
Missouri:	2	1	0	Los Angeles	1	0	7
St. Joseph	2	1	0	Sacramento	0	0	1
				San Francisco	1	0	0

<sup>1</sup> Imported.*Lethargic encephalitis.*—Cases: Boston, 1; New York, 5; Detroit, 2; St. Louis, 1; Baltimore, 1.*Pellagra.*—Cases: Atlanta, 1; Savannah, 1; Miami, 2; Tampa, 1; Montgomery, 1; New Orleans, 1; Dallas, 1; Los Angeles, 1; San Francisco, 1.*Typhus fever.*—Savannah, 1 case.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—2 weeks ended May 5, 1934.*—During the 2 weeks ended May 5, 1934, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada, as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis	1	1		2		1	2			7
Chicken pox	12	1	141	282	60	47	3	84	630	
Diphtheria	3		43	11	6	3				66
Dysentery			1	2						3
Erysipels			10	6	3	1			2	22
Influenza	95		2	40	9	2		9	157	
Lethargic encephalitis			1	1						3
Measles	1	28		647	119	1,218	125	2	11	2,151
Mumps		3			399	16	14		84	516
Pneumonia		9			27		11		15	62
Poliomyelitis			2							2
Scarlet fever	1	30	4	125	300	47	5	4	158	674
Trachoma						2	1	2	1	6
Tuberculosis	4	4	21	110	105	5	21	5	31	303
Typhoid fever			3	41	15	4	8	1	1	73
Undulant fever				1	5					7
Whooping cough		7		211	545	35	17	5	37	853

NOTE.—No report was received from Alberta for the week ended May 5, 1934.

### CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

(NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for May 25, 1934, pp. 636-648. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued June 29, 1934, and thereafter, at least for the time being, in the issue published on the last Friday of each month.)

#### Cholera

*Indo-China—Pnom-Penh.*—For the week ended May 12, 1934, 1 case of cholera was reported in Pnom-Penh, Indo-China.

*Philippine Islands.*—No cholera was reported in the Philippine Islands for the week ended May 19, 1934.

#### Plague

*Argentina—Santiago de Estero Province.*—A report dated May 17, 1934, states that 15 deaths from bubonic plague had been reported to that date in Santiago de Estero Province in the interior of Argentina. Health authorities were placing a sanitary cordon around the area.

*United States—California.*—A report of plague-infected ground squirrels in Kern and Tulare Counties, in the interior of California, appears on page 671 of this issue of the Public Health Reports.